

REMARKS

This paper is being presented in response to the non-final official action dated February 1, 2005, wherein: (a) claims 1-9 are pending; (b) claims 1, 2, and 6-9 have been rejected under 35 USC § 103(a) as being obvious over alleged admissions by the applicant in view of Huang U.S. Patent No. 6,150,073 (the "Huang patent"); (c) claims 3 and 4 have been rejected under § 103(a) as being obvious over alleged admissions by the applicant in view of the Huang patent as applied to claim 1, and further in view of Levy et al. U.S. patent application publication No. 2004/0142557 (the "Levy publication"); and, (d) claim 5 has been rejected under § 103(a) as being obvious over alleged admissions by the applicant in view of the Huang patent as applied to claim 1, and further in view of Hawley et al. U.S. patent application publication No. 2003/0205723 (the "Hawley publication"). Reconsideration and withdrawal of the rejections are respectfully requested in view of the foregoing amendments and following remarks.

I. Summary of the Amendments

Paragraph [0031] has been amended to correct a grammatical error in the first line thereof.

Dependent claim 5 has been canceled.

Independent claim 1 has been amended to incorporate the features recited in now-canceled dependent claim 5. Support for the amendment can be found in claim 5 as originally filed. Support also can be found in the specification at, for example, amended paragraph [0031], which states that:

Preferably the metal hard-mask film 120 is formed by use of materials which are the same as a metal film constituting the bit line, so as to easily remove the metal hard-mask film 120 from the second interlayer insulation film 118 in a subsequent planarization process using chemical and mechanical processes after burying metal in a bit line trench.

See paragraph [0031] of the specification (which refers to Figs. 5A-5D).

Dependent claim 9 has been amended to correct a typographical error. As amended, claim 9 recites that "step (e) comprises a planarization process." Support for the amendment can be found in the specification at, for example, paragraph [0015], which discloses the step of "removing the bit line metal film and the metal hard mask film on the interlayer insulation film by, for example, carrying out a planarization process."

No new matter has been introduced by the foregoing amendments.

II. The 35 USC § 103(a) Rejections are Moot or Traversed

Claims 1, 2, and 6-9 have been rejected under 35 USC § 103(a) as being obvious over alleged admissions by the applicant in view of the Huang patent, and dependent claims 3 and 4 have been rejected under § 103(a) as being obvious over alleged admissions by the applicant in view of the Huang patent as applied to claim 1, and further in view of the Levy publication. Because claim 5 was not rejected by these specific combinations of prior art references, and because the features of claim 5 have been incorporated into the sole independent claim, the foregoing § 103(a) rejections are moot. Accordingly, reconsideration and withdrawal of these rejections are respectfully requested.

Now-canceled, dependent claim 5 has been rejected under § 103(a) as being obvious over alleged admissions by the applicant in view of the Huang patent as applied to claim 1, and further in view of the Hawley publication. As noted above, the features of claim 5 have been incorporated into independent claim 1. A response to this obviousness rejection is set forth below.

A. Proper Basis for a § 103(a) Rejection

The PTO “has the burden under § 103 to establish a prima facie case of obviousness.” *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). To establish a prima facie case of obviousness, the PTO must satisfy three basic criteria. First, the PTO must show that the combined disclosure of the prior art references teaches or suggests all of the claim limitations. *See* MPEP § 2143 (8th ed., May 2004). Moreover, it is “incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference.” *Ex parte Levy*, 17 USPQ2d 1461, 1462 (Bd. Pat. App. & Inter. 1990).

Second, where obviousness is alleged to arise from a combination of elements across a plurality of references, the PTO must show the existence of some suggestion, motivation, or teaching to those skilled in the art to make the precise combination recited in the claims. *See Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1320 (Fed. Cir. 2004). Compliance with this requirement prevents the PTO’s use of “the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability — the essence of hindsight.” *Ecolochem, Inc. v. Southern Cal. Edison Co.*, 227 F.3d 1361, 1371-72 (Fed. Cir. 2000) (quoting *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999)). Evidence of a suggestion or motivation to combine prior art references may come from “the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved.” *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1125 (Fed. Cir. 2000). The PTO’s showing “must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not ‘evidence.’” *Id.* (quoting *In re Dembiczak*, 175 F.3d at 1000). Indeed, the U.S. Court of Appeals for the Federal Circuit has consistently held that a person having

ordinary skill in the art must not only have had some motivation to combine the prior art teachings, but also some motivation to combine the prior art teachings **in the particular manner claimed**. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000) ("Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination **in the manner claimed**." (emphasis added)).

To support a conclusion that a claimed combination is *prima facie* obvious, either (a) the references must expressly or impliedly suggest the claimed combination to one of ordinary skill in the art, or (b) the PTO must present a convincing line of reasoning as to why a person of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. See *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985); see also, *In re Rinehart*, 531 F.2d 1048, 1051 (CCPA 1976). The mere fact that the prior art could be modified as proposed by the PTO is not sufficient to establish a *prima facie* case of obviousness. See *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). The PTO must explain why the prior art would have suggested to one of ordinary skill in the art the desirability of the modification. *Id.*; *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) ("In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination **in the manner claimed**." (emphasis added)).

Finally, the PTO must demonstrate that a person having ordinary skill in the art would have a reasonable expectation of success when combining the disclosures of the references. The suggestion or motivation to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and must not be derived by hindsight from knowledge of the application's disclosure. *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988); MPEP § 2143.

**B. No Prima Facie Case of Obviousness Has Been Made
and, therefore, the § 103(a) Rejection is Traversed**

The combined disclosures of the alleged admissions by the applicant, the Huang patent, and Hawley publication **do not** teach or suggest all of the limitations recited in amended independent claim 1 (or claims 2-4 and 6-9 dependent therefrom). Thus, no *prima facie* case of obviousness has been made in the instant action, and none exists based on the combination of the applied references. Accordingly, reconsideration and withdrawal of the § 103(a) rejection are respectfully requested.

As amended, independent claim 1 recites "(e) removing the bit line metal film and the metal hard mask film on the interlayer insulation film with a metal material, wherein the metal hard-mask film and the bit line metal film are formed using the same metal material used in

step (e).” The metal hard-mask film and the bit line metal film are formed on the interlayer insulation film. Additionally, the metal hard-mask film and the bit line metal film are formed using the same metal material so that these are removed by performing chemical mechanical polishing process once. See paragraph [0031] of the specification.

In contrast to the method recited in independent claim 1, the Huang patent discloses that a material of the hard mask layer is *different* from that of the bit line film. Therefore, the hard mask layer and the bit line film cannot be removed by chemical mechanical polishing process once. The Hawley publication does not remedy the deficiencies present in the Huang publication. Specifically, the Hawley publication does not teach or suggest removing the tungsten plug and tungsten layer by chemical mechanical polishing process.

In addition, the hard mask film recited in independent claim 1 is used to mask a trench. In contrast, the tungsten layer disclosed in the Hawley publication is used to mask an anti fuse. Furthermore, the hard mask film recited in independent claim 1 is formed *before* forming the trench. In contrast, in the Hawley publication, the tungsten layer is formed *after* the formation of the via hole (or the trench).

Given these differences, it is respectfully submitted that the claimed invention is unobvious. Accordingly, reconsideration and withdrawal of the rejection are requested.

CONCLUSION

Prima facie obviousness under § 103 is a legal conclusion — not a fact. *In re Rinehart*, 531 F.2d at 1052. The foregoing response identifies facts (e.g., evidence in the form of statements in the prior art) rebutting the alleged legal conclusion that the claimed invention is prima facie obvious. Indeed, to the extent that a prima facie case of obviousness has been made or even exists, the foregoing response identifies facts that rebut a legal conclusion that the claimed invention is prima facie obvious. All of these facts must be evaluated along with the facts on which the legal conclusion was originally reached — not the legal conclusion itself. Having requested herein reconsideration of the legal conclusion set forth in the official action, the PTO is obligated to address all of the evidence and base its forthcoming legal conclusion(s) on such evidence, uninfluenced by its earlier conclusions. *Id.*

In view of the foregoing, entry of the amendment to the specification, cancellation of claim 5, entry of the amendments to claims 1 and 9, reconsideration and withdrawal of the rejections, and allowance of all pending claims 1-4 and 6-9 are respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form or procedure in an effort to advance this application to allowance, he is urged to contact the undersigned attorney.

Respectfully submitted,

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